

9/27/17

"Success is not final, failure is not fatal: it is courage to continue that counts"-Winston Churchill

HW: "2017 A2 CC Adding and Subtracting Radicals" #4-16 even, 30

AIM: How do we Add/Subtract Radicals?

Warm Up:

1.  $4\sqrt[4]{81x^{16}y^8z^4}$

*index of 4*

*(in order to get out the power needs to be a multiple of 4)*

$4\sqrt[4]{81x^{16}y^8z^4}$

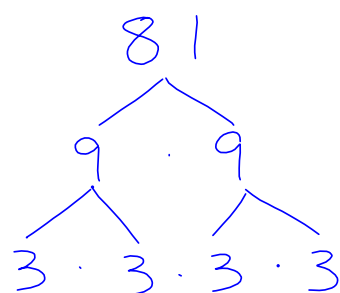
$4 \cdot 3x^4y^2z$

$12x^4y^2z$

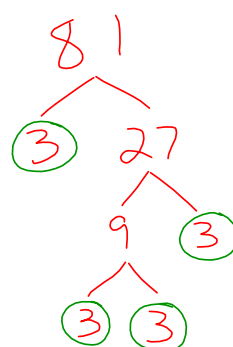
2.  $\sqrt{250a^4b^5c^{13}}$

$\sqrt{25a^4b^4c^{12}} \sqrt{10b^1c^1}$

$5^2 2^6 \sqrt{10bc}$



$$81 = 3^4$$



$$81 = 3^4$$

HW Check:

17)  $\sqrt{20x^{10}y^5}$

$\sqrt{4x^{10}y^4}$        $\sqrt{5y}$

$\downarrow \downarrow \downarrow$

$2x^5y^2 \sqrt{5y}$

16)  $\sqrt{32m^7n^{11}}$

$\sqrt{16m^6n^{10}}$        $\sqrt{2m'n'}$

$\downarrow$

$4m^3n^5 \sqrt{2mn}$

18)  $\sqrt{100ab^4}$

$\sqrt{100b^4}$        $\sqrt{a}$

$10b^2 \sqrt{a}$

Adding and subtracting radicals is done in a similar manner as adding and subtracting polynomials. We need to combine **like radicals**. Like radicals are radicals that have the same index and the same radicand. Also the coefficients must be "like" to combine. It is often necessary to simplify radicals in order to tell if the radicals are like.

Examples; Perform the indicated operations.

$$6x - 4x = 2x$$

$$1. 6\sqrt{7} - 4\sqrt{7} = \boxed{2\sqrt{7}}$$

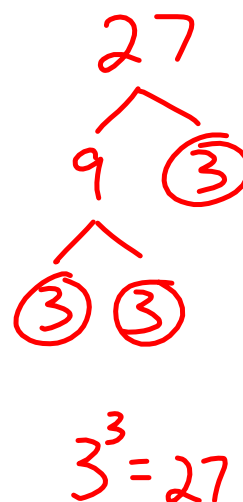
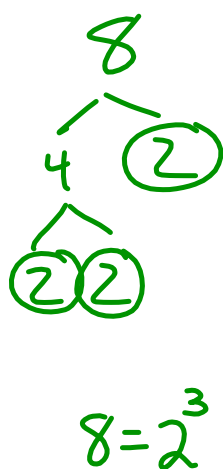
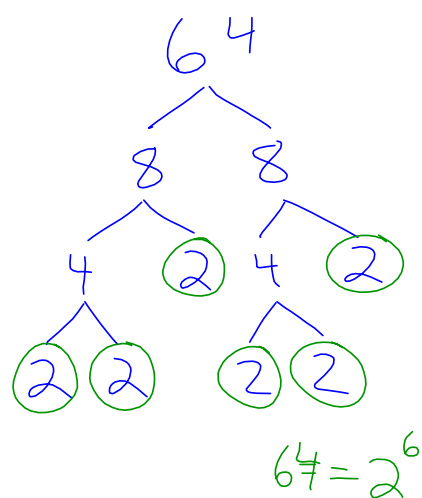
$$2. 2\sqrt{5} + 9 - \sqrt{20}$$

$$\begin{array}{r} \sqrt{4} \sqrt{5} \\ 2\sqrt{5} + 9 - 2\sqrt{5} \\ \hline = \boxed{9} \end{array}$$

$$3. \sqrt{125b} + \sqrt{12b} - \sqrt{45b} + \sqrt{75b}$$

$$\begin{array}{cccc} \sqrt{25} \sqrt{5b} & \sqrt{4} \sqrt{3b} & \sqrt{9} \sqrt{5b} & \sqrt{25} \sqrt{3b} \\ 5\sqrt{5b} + 2\sqrt{3b} - 3\sqrt{5b} + 5\sqrt{3b} \\ \hline \boxed{2\sqrt{5b} + 7\sqrt{3b}} \end{array}$$

$$4. \sqrt[3]{64x} - \sqrt[3]{8x} + \sqrt[3]{27x}$$



$$5. \sqrt{250a^2} + \sqrt{10a^2}$$

$$6. \sqrt{24xa^2} + \sqrt{54xa^2}$$

$$7. 2\sqrt{32x^2y^3} - xy\sqrt{98y}$$

$$8. 2\sqrt{3y} - 5y^2 + 4\sqrt{3y} + \sqrt{36y^4}$$

$$9. \sqrt{63a^3} - \sqrt{45a^3}$$